

Table 6 gp120

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(2-10 IIIB)	gp120(2-10)	RVKEKYQHL	HIV-1 infection	human(B8)	[Sipsas et al.(1996)]
gp120(32-56)	gp120(30-54)	TEKLWVTVYYGVPVW- KEATTLFCA	HIV-1 infection	human(B7)	[Johnson & Walker(1994)]
		• This epitope was listed in a review			
gp120(32-56 LAI)	gp120(30-54)	TEKLWVTVYYGVPVW- KEATTLFCA	gp160 vacc vaccine	human(B18)	[Johnson et al.(1994a)]
		• HLA restricted CTL response to epitope in HIV-1 vaccinia-env vaccinees			
gp120(32-56 LAI)	gp120(30-54)	TEKLWVTVYYGVPVW- KEATTLFCA	gp160 vacc vaccine	human(B18)	[Hammond et al.(1995)]
		• This peptide can be processed for HLA-B18 presentation in a TAP-1/2 independent pathway			
gp120(32-41 LAI)	gp120(32-41)	KLWVTVYYGV	MN rec gp160	human(A2?)	[Dupuis et al.(1995)]
		• CTL from HLA-A2 positive subject react with this peptide; binds to HLA A*0201			
gp120(25-46 BRU)	gp120(33-54)	LWVTVYYGVPVWKEA- TTLFCA	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
		• Defined through peptide blocking of CTL activity, and Env deletions			
gp120(37-46 LAI)	gp120(36-45)	TVYYGVPVWK	gp160 vaccinia vaccine	human(A3.1)	[Johnson et al.(1994b)]
		• Multiple CTL clones obtained from two vaccinees			
gp120(38-41 LAI)	gp120(36-45)	TVYYGVPVWK	gp160 vaccinia vaccine	human(A3.1)	[Johnson et al.(1994a)]
		• Highly conserved epitope recognized by multiple CTL clones from vaccinee			
gp120(37-46 LAI)	gp120(36-45)	TVYYGVPVWK	gp160 vaccinia vaccine	human(A3.1)	[Hammond et al.(1995)]
		• This peptide can be processed for HLA-A3.1 presentation in a TAP-1/2 independent pathway			
gp120(42-51 PV22)	gp120(41-50)	VPVWKEATT	HIV-1 infection	human(B55)	[Brander & Walker(1995)]
		• P. Johnson, unpublished			
gp120(42-52 PV22)	gp120(41-51)	VPVWKEATT	HIV-1 infection	human(B35)	[Wilkes et al.(1996)]
		• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study			
gp120(49-68)	gp120(41-60)	VPVWKEATTLCAS- DAKAY	HIV infection	human(?)	[Lieberman et al.(1995)]
		• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide			
gp120(59-78)	gp120(51-70)	LFCASDAKAYDTEVH- INVWAT	HIV infection	human(?)	[Lieberman et al.(1995)]
		• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide			
gp120(59-68 HXB2)	gp120(51-60)	LFCASDAKAY	HIV-1 infection	human(?)	[Lieberman et al.(1992)]
		• CTL epitope defined by T cell line, not clones, and peptide mapping			

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(53-62 LAI)	gp120(51-60)	LFCASCAKAY	HIV-1 infection	human(B38)	[Shankar et al.(1996)]
	• Uncertain whether optimal, binds A24 as well				
gp120(77-85 SF2)	gp120(77-85)	DNPQEVVL	HIV-1 infection	human(B35,B51)	[Shiga et al.(1996)]
	• Binds HLA-B*3501 and B*5101 – binds and kills gp120-vaccinia virus infected cells carrying B35 or B51				
gp120(111-126 IIIB)	gp120(103-118)	MQEDIISLWDQSLKP-C	primary in vitro response to peptide	human(?)	[Macatonia et al.(1991)]
	• Primary CTL response with cells from non-infected donors stimulated by the peptide				
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	HIV-1 infection	human(A2)	[Clerici et al.(1991)]
	• Helper and cytotoxic T cells can be stimulated by this peptide (T2)				
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	HIV exposure	human(?)	[Pinto et al.(1995)]
	• CTL and T helper cell reactivity in health care workers exposed to HIV				
gp120(120-128 LAI)	gp120(120-128)	KTLPLCVTL	MN rec gp160	human(A2)	[Dupuis et al.(1995)]
	• CTL from HLA-A2 positive subject react with this peptide; peptide binds to HLA A*0201				
gp120(156-165 IIIB)	gp120(160-169)	NCSFNISTSI	HIV-1 infection	human(Cw8)	[Sipsas et al.(1996)]
gp120(193-212 BRU)	gp120(192-311)	TTSYTLTSCNTSVIT-QACPK	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				
gp120(192-199 HXB2R)	gp120(196-204)	KLTSCNTSV	HIV-1 infection	human(A2)	[Brander et al.(1995)]
	• Epitope studied in the context of inclusion in a synthetic vaccine – predicted on motif				
gp120(197-205)	gp120(196-204)	TLTSCNTSV	no CTL shown	human(A2)	[Garboczi et al.(1992)]
	• Crystallization of HLA-A2 molecules complexed with antigenic peptides – refers to Dadaglio et al 1991				
gp120(201-225 LAI)	gp120(205-229)	ITQACPKVSFEPIPH-YCAPAGFAI	gp160 vacc vaccine	human(CD4+ CTL)	[Johnson et al.(1994b), Johnson et al.(1994a)]
	• CD4+ CTL isolated from LAI IIIB gp160 vaccinees				
gp120(209-228)	gp120(206-225)	TQACPKVSFEPIDIH-YCAPA	HIV infection	human(?)	[Lieberman et al.(1995)]
	• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide				
gp120(219-238 HXB2)	gp120(216-235)	PIPIHYCAPAGFAIL-KCNNK	HIV-1 infection	human(?)	[Lieberman et al.(1992)]
	• CTL epitope defined by T cell line, not clones, and peptide mapping				
gp120(219-238)	gp120(216-235)	PIPIHYCAPAGFAIL-KCNNK	HIV infection	human(?)	[Lieberman et al.(1995)]
	• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide				
gp120(241-249 LAI)	gp120(243-251)	CTNVSTVQC	HIV-1 infection	human(Cw8)	[Sipsas et al.(1996)]

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(249-268)	gp120(246-265)	VSTVQCTHGIRPVVS-TQLLL	HIV infection	human(?)	[Lieberman et al.(1995)]
		• HIV-specific CTL lines developed by <i>ex vivo</i> stimulation with peptide			
gp120(256-275 LAI)	gp120(256-275)	RPVVSTQLLNGLSLA-EEEVV	HIV-1 infection	human(B7)	[Shankar et al.(1996)]
		•			
gp120(255-263 SF2)	gp120(256-264)	RPIVSTQLL	HIV-1 infection	human(B35)	[Shiga et al.(1996)]
		• Binds HLA-B*3501			
gp120(295-312 BRU)	gp120(295-311)	SVEINCTRPNNNTRK-SI	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
		• Defined through blocking CTL activity, and Env deletions			
gp120(302-312 HXB2)	gp120(302-311)	RPNNNTRKSI	HIV-1 infection	human(B7)	[Safrit et al.(1994b)]
		• CTL from two acute seroconversion cases			
gp120(302-312 HXB2)	gp120(302-311)	RPNNNTRKSI	HIV-1 infection	human(B7)	[Hammond et al.(1995)]
		• Peptide processed by a TAP-1/2-dependent pathway only			
		• CTL from an acute seroconverter			
gp120(302-312 HXB2)	gp120(302-311)	RPNNNTRKSI	HIV infection	human(B7)	[Wolinsky et al.(1996)]
		• Longitudinal study of epitope variation <i>in vivo</i>			
gp120(303-312 IIIB)	gp120(302-311)	RPNNNTRKSI	HIV-1 infection	human(?B7)	[Wilkes et al.(1996)]
		• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study			
		• RPNNNTRKDI and RPNNNTRKGI, naturally occurring variants, were found in non-transmitting mother – ability to recognize these variants has not yet been determined			
gp120(V3 loop HXB2)	gp120(310-324)	RIQRGPGRAFVTIGK	gag-V3 fusion	murine(H-2 ^d)	[Griffiths et al.(1993)]
		• Gag-V3 fusion protein immunization elicited V3 CTL response in mice			
gp120(V3 loop many strains)	gp120(310-324)	RIHIGPGRAYTTKN	V3 loop peptides	murine(H-2D ^d)	[Casement et al.(1995)]
		• V3 peptides from MN and SC include murine CTL that are cross reactive with diverse strains			
gp120(V3 loop MN)	gp120(313-322)	IGPGRAFYTT	<i>B. abortus</i> -peptide conjugate	murine(H-2D ^d)	[Lapham et al.(1996)]
		• <i>B. abortus</i> -peptide conjugate induced a virus-specific CTL response in CD4+ lymphocyte depleted mice			
gp120(315-329)	gp120(310-324)	RIQRGPGRAFVTIGK	vaccinia IIIB gp160	murine(H-2D ^d)	[Takahashi et al.(1988)]
		• V3 loop CTL response in mice vaccinated with gp160			
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	IIIB peptide	murine(D ^d)	[Takahashi et al.(1989a)]
		• R(8) F(10) MHC/peptide interaction; V(11) T cell receptor binding			
gp160(318-327) IIIB	gp120(313-322)	RGPGRAFVTI	peptide	murine(D ^d)	[Takahashi et al.(1993)]
		• Successful priming with vaccination of peptide pulsed splenic dendritic cells			

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV exposure	human(?)	[Pinto et al.(1995)]
	• CTL and T helper cell reactivity in health care workers exposed to HIV				
gp160(318-327) IIIB	gp120(313-322)	RGPGRAFVTI	peptide	murine(H-2D ^d)	[Takeshita et al.(1995)]
	• XGPXRXXXXI are critical for binding, consistent with H-2D ^d motif XGPX(RKH)XXX(X)(LIF)				
gp120(315-329 BRU)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV-1 infection	human(A2)	[Clerici et al.(1991)]
	• Helper and cytotoxic T cells can be stimulated by this peptide (P18)				
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	vaccinia IIIB gp160	murine(H-2 ^{d,p,u,q})	[Shirai et al.(1992)]
	• In a murine system multiple class I molecules can present to CTL				
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	V3:Ty-Virus-like particles	murine(H-2 ^d)	[Layton et al.(1993)]
	• V3-Ty-Virus-like particles can induce type specific CTL in mice in the absence of adjuvant				
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	vaccinia IIIB gp160	human(A11)	[Achour et al.(1994)]
	• One of 3 HLA type restrictions associated this peptide				
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	gp160 vaccinia	human(A2,A3)	[Achour et al.(1993)]
	• Two of 3 HLA type restrictions associated this peptide				
gp120(313-327 MN)	gp120(310-324)	RIHIGPGRAFYTTKN	MN gp160 vac- cinia	murine(D ^d)	[Takahashi et al.(1989b)]
	• Y(11 MN) exchange with V(11 IIIB) interchanges specificities				
gp120(313-327 MN)	gp120(310-324)	RIHIGPGRAFYTTKN	HIV exposure	human(?)	[Pinto et al.(1995)]
	• CTL and T helper cell reactivity in health care workers exposed to HIV				
gp120(313-327 IIIB), MN, RF)	gp120(310-324)	SITKGPGRVYATGQ	RF gp160 vaccinia	murine(D ^d)	[Takahashi et al.(1992)]
	• Comparison of MN, IIIB, and RF specificities, position 11 is critical				
gp120(314-322)	gp120(316-324)	GRAFVTIGK	no CTL shown	human(B27)	[Jardetzky et al.(1991)]
	• Study of peptide binding to HLA B27; epitope examined in this context				
gp120(337-368 LAI)	gp120(340-364)	KWNNTLKQIDSKLRE- QFGNNKTIF	gp160 vacc cine	human(CD4+ CTL)	[Johnson et al.(1994a)]
	• CD4+ CTL clones were obtained from an HIV-1 vaccinia-env vaccinee				
gp120(339-361 LAI)	gp120(342-359)	NNTLKQIDSKLREQF- G	gp160 vaccinia	human(CD4+ CTL)	[Johnson et al.(1994b)]
	• CD4+ CTL isolated from LAI IIIB gp160 vaccinees				
gp120(374-380 BRU)	gp120(373-379)	PEIVTHS	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(376-383 PV22)	gp120(379-387)	SFNCGGEFF	HIV-1 infection	human(Cw4)	[Johnson et al.(1993)]
	• Conserved epitope; the G to R substitution FNCRGEFF abolished CTL recognition				
gp120(376-383 PV22)	gp120(379-387)	SFNCGGEFF	CTL not shown	human(Cw4)	[Wolinsky et al.(1996)]
	• Longitudinal study of epitope variation <i>in vivo</i>				
gp120(375-383 IIIB)	gp120(379-387)	SFNCGGEFF	HIV-1 infection	human(B15)	[Wilkes et al.(1996)]
	• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study				
	• SSTCGGEFF, naturally occurring variant, found in mother and recognized				
	• SFTCGGGVF, naturally occurring variant, found in mother and not recognized				
	• SFTCGGEFF, naturally occurring variant, found in both mother and infant and recognized				
	• Also, C. Wilson, in press in J. Virol., reacts with HLA-Cw4 as well				
gp120(376-384 IIIB)	gp120(380-388)	FNCGGEFFY	HIV-1 infection	human(A29)	[Wilkes et al.(1996)]
	• Epitope defined in the context of the Pediatric AIDS Found. ARIEL project mother-infant HIV transmission study				
	• FNCRGEFFY, a naturally occurring variant, was recognized, FNCRGFFY, a naturally occurring variant, was not				
gp120(376-384 LAI)	gp120(380-388)	FNCGGEFFY	HIV-1 infection	human(A29)	[Brander & Walker(1996)]
	• C. Wilson, in press in J. Virol.				
gp120(377-387)	gp120(381-391)	NSGGEFFYSNS	?	human(A2)	[Hickling et al.(1990)]
	• Peptides recognized by class I restricted CTL can bind to class II				
gp120(381-392 BRU)	gp120(380-391)	KNCGGEFFYCNS	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				
gp120(421-440 LAI)	gp120(417-436)	LPCRIKQFINMWQEVKAMY	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				
gp120(410-429 H3DCG)	gp120(417-430)	LPCRIKQFINMWQE	HIV-1 infection	human(DR4 CD4+)	[Siliciano et al.(1988)]
	• CD4+ CTL restricted by class II HLA-DR4, targets primed by CD4 mediated uptake of gp120				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMY-	vaccinia IIIB	murine(H-2 ^{a,b,f})	[Shirai et al.(1992)]
	A	gp160			
	• In a murine system multiple class I molecules can present to CTL				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMY-	HIV exposure	human(?)	[Pinto et al.(1995)]
	A				
	• CTL and T helper cell reactivity in health care workers exposed to HIV				
gp120(421-440 LAI)	gp120(422-436)	KQFINMWQEVGKAMY	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]
	• Defined through blocking CTL activity, and Env deletions				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMY-	HIV-1 infection	human(A2)	[Clerici et al.(1991)]
	A				
	• Helper and cytotoxic T cells can be stimulated by this peptide (T1)				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMY-	HIV-1 infection	human(A2)	[Cease et al.(1987)]
	A				
	• Helper and cytotoxic T cells can be stimulated by this peptide (T1)				

HIV CTL Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(431-440)	gp120(435-444)	MYAPPIGGQI ● Tolerization of CTL response with continued administration of soluble peptide	synthetic peptide	murine(H-2K ^d)	[Duarte et al.(1996)]
gp120(494-513 BRU)	gp120(491-510)	VKIEPLGVAPTKAKR- RVVQR ● Defined through blocking CTL activity, and Env deletions	HIV-1 infection	human(A2)	[Dadaglio et al.(1991)]